

**Neuropsychology Abstracts**

**Title:** CHIARI MALFORMATION AND THE IMPACT OF HYDROCEPHALUS ON COGNITION

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**Background:** Chiari malformations are very prevalent in patients with spina bifida and is often associated with hydrocephalus. While research has identified the cognitive deficits associated with hydrocephalus, little is known about the deficits related to chiari malformation without hydrocephalus. Those with chiari malformation and hydrocephalus often display deficits in IQ, memory, visuospatial skills, executive functioning, and fine motor skills. It is postulated that those with chiari malformation and no hydrocephalus will also display deficits in these areas, but with significantly less severity.

**Method:** 47 consenting patients with spina bifida and chiari malformation were recruited from the Loma Linda University Spina Bifida Clinic. Of these 47 patients, 30 had shunted hydrocephalus and 17 did not have hydrocephalus. All patients were administered a neuropsychological battery that measured IQ, memory, visuospatial skills, executive functioning and fine motor skills.

**Results:** Patients with no hydrocephalus displayed an IQ that was normal but below the mean of the general population. The no hydrocephalus patients also performed within the average range, but below the mean, on all other cognitive tests. The no hydrocephalus patients performed significantly below the general population on all tests requiring fine motor skills. Patients with chiari malformation and hydrocephalus performed significantly below the no hydrocephalus group on all domains of cognitive functioning. These deficits were most pronounced in the areas of memory and visuospatial skills. The groups did not differ on tests requiring fine motor skills. In addition, cognitive deficits were inversely related to the number of shunt revision a patient has received.

**Conclusion:** While patients with no hydrocephalus performed in the average range on cognitive tests, the hydrocephalus group displayed significant deficits in all areas. These deficits appeared to be confounded with each additional shunt revision. Fine motor functioning was impaired in both groups, but was not influenced by hydrocephalus or shunt replacements.